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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,339	02/07/2002	Bing-Chang Wu	TKHR5060-D	4153

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03/20/2003

EXAMINER

HA, NGUYEN T

ART UNIT PAPER NUMBER

2831

DATE MAILED: 03/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,339

Applicant(s)

WU, BING-CHANG

Examiner

Nguyen T Ha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 8-12 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al (6,096,591) in view of Divakaruni et al (6,429,068)

Regarding claim 8, Gardner et al discloses a high resistive thin film resistor structure (figures 1-2) comprising a substrate (202) having an isolation region (276) and an active region (208), a patterned lightly doped polysilicon layer (124) located above the isolation region, **but not in contact with the isolation region**, a diffusion barrier layer (122) and a spacer (142) located on the sidewalls of the lightly doped polysilicon layer and the barrier diffusion layer (figure 1M).

Gardner lacks the diffusion barrier layer located above the polysilicon layer and the polysilicon layer in contact with the isolation region.

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However, Divakaruni et al teach (figure 2) the barrier layer (250) located above the polysilicon layer (221) and the polysilicon layer (221) in contact with the isolation region (208).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Gardner thin film resistor as taught by Divakaruni et al to have the barrier layer located above the polysilicon layer and the polysilicon layer contact with the isolation in order to improved a circuit performance over known diffused resistor under high temperature.

Regarding claim 9, Gardner et al discloses the structure wherein the isolation region includes a shallow trench isolation structure (column 8 lines 15-16)

Regarding claim 10, Gardner et al discloses the thickness of the polysilicon layer is about 2000 Angstrom (column 5 lines 38-39).

Regarding claim 11, Gardner et al discloses the diffusion barrier layer includes a silicon dioxide layer (column 5 lines 32-33).

Regarding claim 12, Gardner et al discloses the silicon dioxide has a thickness of 30 to 100 Angstrom (column 5 lines 35-36).

Regarding claim 13, the teaching of Divakaruni includes the diffusion barrier layer covers an entire upper surface of the lightly doped polysilicon layer (figure 2).

Regarding claim 14, Gardner et al disclose the spacer is in contact with the sidewalls of the lightly doped polysilicon layer and the barrier diffusion layer (figure 1Q).

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Citation Relevant of Prior Art

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Tu discloses method to fabricate dram capacitor using damascene process.

b. Ellis-Monaghan et al disclose silicon-on-insulator and CMOS on SOI double film fabrication process with a coplanar silicon.

c. Ohkawa et al disclose semiconductor device with thin film resistor.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T Ha whose telephone number is 703-308-6023. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 703-308-3682. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

NH
March 16, 2003

 3/18/03
DEAN A. REICHARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800